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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/518,350

10/14/2005

Henryk Frenzel

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EXAMINER

THOMAS, MIA M

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

09/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,350

Applicant(s)

FRENZEL ET AL.

Examiner

Mia M. Thomas

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>see attached</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the applicant's remarks received on 17 December 2004. Claims 1-14 are cancelled and claims 15-32 remain pending.

The preliminary amendment "is being filed in an effort to present an application in proper U.S. format and to present the claims in proper U.S. claim idiom for examination.

Examiner is entering the preliminary amendment to instant application 10/518,350.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Suggestions

3. It shall be noted that, regarding claims 15,16, 24 and 26, "While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir.1997) Manual of Patent Examining Procedures 2114. Each of the aforementioned claims suggests that the method and/or device of applicant's invention is configured to achieve or produce the desired element of that limitation. A device for detecting an object or person can be configured to perform any reasonable task where one of ordinary skill in the art may be skilled to operate said device. Examiner suggests clarification of the claim language and interpretation so that the claims shall distinguish from the prior art in terms of structure rather than function.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 15, 18-22, 25-27, 30-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Pavlidis (US 6,829,370 B1).

Regarding Claim 15: Pavlidis discloses a device for detecting an object or a person ("The invention pertains to detection of people, and particularly to detection of occupants in vehicles."

at column 1, line 7; Refer to Figure 1, numeral 10), comprising:

at least one illumination unit configured to emit light pulses for illuminating an image field to be captured (Refer to Figure 1, numeral 14);

an image capture unit including at least one image sensor *configured to* receive reflected light pulses from an object or a person in the image field, and to capture image data of the object or the person (Refer to Figure 1, numerals 11 and 12);

said at least one illumination unit disposed spatially separate from said image capture unit

(Referring to Figures 14, 11 and 12, the respective "units" are separate from each other and disposed along a central axis);

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one of said separately disposed illumination unit and said image capture unit: including an optical transmitter (Refer to Figure 2, numerals 48 and 49) configured to emit control light pulses for synchronizing or controlling said units ("Time co-registration of the cameras means that the cameras are in synchronization with each other from a signal perspective." at column 5, line 41); and the other one of said separately disposed illumination unit and said image capture unit: including an optical receiver for receiving the control light pulses (Refer to Figure 1, numerals 46 and 47).

Regarding Claim 26: Pavlidis discloses a method of detecting an object or a person ("The invention pertains to detection of people, and particularly to detection of occupants in vehicles." at column 1, line 7; Refer to Figure 1, numeral 10), which comprises: providing: at least one illumination unit configured to emit light pulses for illuminating an image field to be captured (Refer to Figure 1, numeral 14); an image capture unit, disposed spatially separate from the illumination unit, the image capture unit including at least one image sensor for receiving reflected light pulses from an object or a person in the image field and capturing image data related to the object or person (Refer to Figure 1, numerals 11 and 12); emitting control light pulses from an optical transmitter, with one of the illumination unit and the image capture unit, for synchronizing or controlling the units (Refer to Figure 1, specifically, the signal(s) emitted that are further denoted by dotted lines between numerals 11, 12 and 13; Time co-registration of the cameras means that the cameras are in synchronization with each other from a signal perspective. The signals for each of the two corresponding pixels go to a frame buffer at the same time." at column 5, line 41); and receiving the control light pulses through an optical receiver, with the other one of the illumination unit and the image capture unit (Refer to Figure 1, numeral 17 "software processing").

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Regarding Claim 18: Pavlidis discloses the device according to claim 15, wherein said optical transmitter is a component of said image capture unit ("One embodiment of the present invention has two cameras of different sensing wavelengths in the near-infrared bandwidth. These cameras are pointed toward a place where humans may be detected. A near-infrared lamp for the illumination of the scene may be used. The two outputs of the cameras are fused together with a weighted difference to result in an image having an intensified contrast." at column 3, line 22).

Regarding Claim 19: Pavlidis discloses the device according to claim 15, wherein the control light pulses are transmitted in modulated and/or encoded form ("The present invention utilizes radiation in the middle region of the EM spectrum regarded as the infrared spectrum. This spectrum includes wavelengths from 0.7 to 100 microns. Within the infrared range, two bands of particular interest are the 0.7 to 3.0 micron, 3.0 to 5.0 micron and 8.0 to 14 micron bands." At column 2, line 45).

Regarding Claim 30: Pavlidis discloses a method with elements that equally resemble the claimed elements of Claim 19. Therefore, Claim 30 stands rejected on the same grounds as stated at Claim 19.

Regarding Claim 20: Pavlidis discloses the device according to claim 15, wherein the control light pulses have a wavelength in a-near infrared range (The latter two bands are regarded as the thermal infrared band and the first band as the reflected infrared band. The reflected infrared band is associated with reflected solar radiation that contains no information about the

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thermal properties of materials. This radiation is for the most part invisible to the human eye.” at column 2, line 50).

Regarding Claim 31: Pavlidis discloses a method with elements that equally resemble the claimed elements of Claim 20. Therefore, Claim 31 stands rejected on the same grounds as stated at Claim 20.

Regarding Claim 21: Pavlidis discloses the device according to claim 15, wherein said illumination unit is aligned towards the object or the person and, relative to the image capture unit, said illumination unit is oriented at a given angle α (Refer to Figure 1, numeral 14 and the distance “r” from the object (person)-numeral 13).

Regarding Claim 22: Pavlidis discloses the device according to claim 21, wherein said given angle α (alpha) lies in at least one range selected from the range between 0 degrees and 45 degrees and the range between 135 degrees and 180 degrees (“This represents the reflected portion of the occupant irradiation. The occupant’s body absorbs the rest. The reflected radiation has to pass through windshield 45 and the camera 11, 12 lens to reach the near-infrared sensor array of camera 11, 12. One assumes a 0.4 windshield transmittance, a f/2 camera lens (i.e., having a 14.32 degrees cone angle) with 0.8 transmittance, a polarizer with 0.4 transmittance, and a band-pass filter with 0.6 transmittance. Then, the irradiance at the sensor array of camera 11, 12 will be [Equation 4 at column 9, line 42]” at column 9, line 32).

Regarding Claim 25: Pavlidis discloses a method of detecting an object or a person, which comprises: operating the device according to claim 15 for detecting the object or the person (“A

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detection method and system that detects reflection from a scene in at least a portion of an upper band of the near infrared spectrum (e.g., at least a portion within the range of 1.4 micro-meters and above in the near infrared spectrum." at abstract).

Regarding Claim 27: Pavlidis discloses the method according to claim 26, which comprises detecting an object or a person inside a motor vehicle ("A detection method and system that detects reflection from a scene in at least a portion of an upper band of the near infrared spectrum (e.g., at least a portion within the range of 1.4 micro-meters and above in the near infrared spectrum." at abstract).

Regarding Claim 32: Pavlidis discloses the method according to claim 26, which comprises compensating a time offset by transmitting the control light pulses at an earlier point in time (FIG. 2 illustrates the co-registration of cameras 11 and 12. There is spatial and time registration between the cameras. The cameras could be of the same make and model. The necessary difference between the cameras is the optical bandwidth filters, 48 and 49, which are situated between sensing arrays 46 and 47 and camera lens 58 and 59, respectively, of cameras 11 and 12." at column 5, line 15).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavlidis (US 6,829,370 B1) in combination with Wagoner (US 7,214,925 B2).

Regarding Claim 16:

Pavlidis discloses one of said separately disposed illumination unit and said image capture unit: including an optical transmitter (Refer to Figure 2, numerals 48 and 49) configured to emit control light pulses for synchronizing or controlling said units ("Time co-registration of the cameras means that the cameras are in synchronization with each other from a signal perspective." at column 5, line 41); and the other one of said separately disposed illumination unit and said image capture unit: including an optical receiver for receiving the control light pulses (Refer to Figure 1, numerals 46 and 47).

Pavlidis does not specifically disclose a fiber optic cable for transmitting the control light pulses connected between said optical transmitter and said optical receiver.

Wagoner teaches the device according to claim 15, which further comprises a fiber optic cable for transmitting the control light pulses connected between said optical transmitter and said optical receiver (Refer to Figure 1, numeral 29; "The illuminators 13 and 14 and the detectors 15 and 16 may be coupled to the controller 17 via cables 29, which may be in the form of fiber optic cables or other type of cables known in the art allowing the controller 17 to be at a remote location from the illuminators 13 and 14 and the detectors 15 and 16." at column 5, line 15).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use a fiber optic cable for transmitting the control light pulses connected between said optical transmitter and said optical receiver; Refer to Figure 1, numeral 29, as taught by

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Wagoner to the illumination unit and image capture unit as disclosed by Pavlidis because fiber optic cable transmits data using light rather than electricity. It therefore has the ability to carry more information over much longer distances, which would create a stronger telecommunications medium and enhances the overall efficiency of transferring data.

Regarding Claim 28: Applicant claims a method with elements that equally resemble the claimed elements of Claim 16. Therefore, Claim 28 stands rejected on the same grounds, motivation and rationale as stated at Claim 16.

Regarding Claim 24:

Pavlidis discloses a device for detecting an object or a person ("The invention pertains to detection of people, and particularly to detection of occupants in vehicles." at column 1, line 7; Refer to Figure 1, numeral 10), comprising the claimed elements as listed above.

Pavlidis does not specifically disclose wherein the device according to claim 15, [is] *configured for use in an interior of a motor vehicle*, with said illumination unit disposed in or on the motor vehicle.

Wagoner teaches the device according to claim 15, *configured for use in an interior of a motor vehicle*, with said illumination unit disposed in or on the motor vehicle (Refer to Figure 1; "While the present invention is described with respect to a method and system for detecting non-fixed objects within an aircraft, the present invention may be adapted to be used for a variety of other components and systems including automotive vehicles, electronic or mechanical systems,

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machinery, or other components or systems that may require detection of a non-fixed object.” at column 3, line 30).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to configure the device as disclosed by Pavlidis to further be assembled for suitable use in a motor vehicle with said illumination unit disposed in or on the motor vehicle as taught by Wagoner because in either position, on or in the motor vehicle, the device can “also be used in various production and manufacturing processes including before, during, and after assembly of a system [For example, assembly of a vehicle]. The present invention may also be applied in various types of inspection, such as in dye penetrate inspection of raw materials.” at Wagoner, column 3, line 36).

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pavlidis (US 6,829,370 B1) in combination with Brady (US 5,761,326 A).

Regarding Claim 17:

Pavlidis discloses a device with an illumination unit...including an optical transmitter (Refer to Figure 2, numerals 48 and 49) configured to emit control light pulses for synchronizing or controlling said units (“Time co-registration of the cameras means that the cameras are in synchronization with each other from a signal perspective.” at column 5, line 41);

and the other one of said separately disposed illumination unit and said image capture unit: including an optical receiver for receiving the control light pulses (Refer to Figure 1, numerals 46 and 47).

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Pavlidis does not specifically disclose a device according to claim 15, which comprises transmission facilities at said optical transmitter and at said optical receiver, for cordless transmission of the control light pulses.

Brady teaches the device according to claim 15, which comprises transmission facilities at said optical transmitter and at said optical receiver, for cordless transmission of the control light pulses (Refer to Figure 12, numeral 216; "... can be transmitted in a variety of ways such as a commercial network 212, dedicated cable 214, multiplexed in a microwave network 216..." at column 15, line 10).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to enhance the use of the device by utilizing transmission facilities at said optical transmitter and at said optical receiver, for cordless transmission of the control light pulses as taught by Brady to the actual device as disclosed by Pavlidis because the cordless transmission would allow the user to communicate in any mobile environment which would improve the overall device and create multiple manipulations for the device.

Regarding Claim 29: Applicant claims a method with elements that equally resemble the claimed elements of Claim 17. Therefore, Claim 29 stands rejected on the same grounds, motivation and rationale as stated at Claim 17.

9. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pavlidis (US 6,829,370 B1) in combination with Yagi et al (US 6,603,865 B1).

Regarding Claim 23:

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Pavlidis discloses a device with an illumination unit...including an optical transmitter (Refer to Figure 2, numerals 48 and 49) configured to emit control light pulses for synchronizing or controlling said units ("Time co-registration of the cameras means that the cameras are in synchronization with each other from a signal perspective." at column 5, line 41); and the other one of said separately disposed illumination unit and said image capture unit: including an optical receiver for receiving the control light pulses (Refer to Figure 1, numerals 46 and 47).

Pavlidis does not specifically disclose a device according to claim 15, wherein said illumination unit has a power supply independent of a power supply of said image capture unit.

Yagi teaches the device according to claim 15, wherein said illumination unit has a power supply independent of a power supply of said image capture unit (Refer to Figure 1, numeral 14; "The transmitting apparatus 1 includes a position indicating section 11, data transmitting section 12, data processing unit 13, and power supply 14 for supplying power to the sections 11, 12, and 13." at column 4, line 29).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to utilize a power supply independent of a power supply of said image capture unit as taught by Yagi to the device as disclosed by Pavlidis because when the power supplies are otherwise disposed in different locations, "the processing units" can run at the same speed and the overall device wont be tattered and worn, possibly causing processing time to extend far beyond a reasonable expectation for completion. The two processing units can operate synchronously, with different power supplies therefore making the complete detection device more efficient.

Conclusion


10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is 571-270-1583. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on 571-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


BRIAN WERNER
SUPERVISORY PATENT EXAMINER

Mia M Thomas
Examiner
Art Unit 2624